RADIODISCUS HUBRICHTI BRANSON, 1975, A SYNONYM OF *STRIATURA (S.) PUGETENSIS* (DALL, 1895) (PULMONATA: ZONITIDAE)

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ABSTRACT

A paratype of Radiodiscus hubrichti *Branson, 1975, compares exactly with material of* Striatura (S.) pugetensis *(Dall, 1895). The two taxa are considered to be synonyms. Scanning electron microscope photographs of shell sculpture in the two distinct species,* S. (S.) pugetensis *and* S. (S.) milium *(Morse, 1859), show that they have basically identical sculpture.*

The minute (1-3 mm) shells of such genera as *Striatura, Punctum, Radiodiscus,* and *Planogyra* are easily confused. They have a common pattern of decoiling and spire protrusion, all have radial ribbing interspaced with microribs, and in each group the apical and post-apical sculpture are markedly different. Even the best illustrations published previously (Pilsbry, 1946, 1948) suggest that there are more similarities than differences. Use of the scanning electron microscope permits showing that the shell sculpture in these genera, although very similar in gross appearance, is formed quite differently. This paper reports on the basic sculpture of *Striatura, s. s.,* while a subsequent contribution (Solem, in this issue of *The Nautilus*) will illustrate the same features as found in *Striatura (Pseudohyalina), Punctum, Radiodiscus* and *Planogyra.* Comparative remarks are included in the second paper.

SHELL SCULPTURE

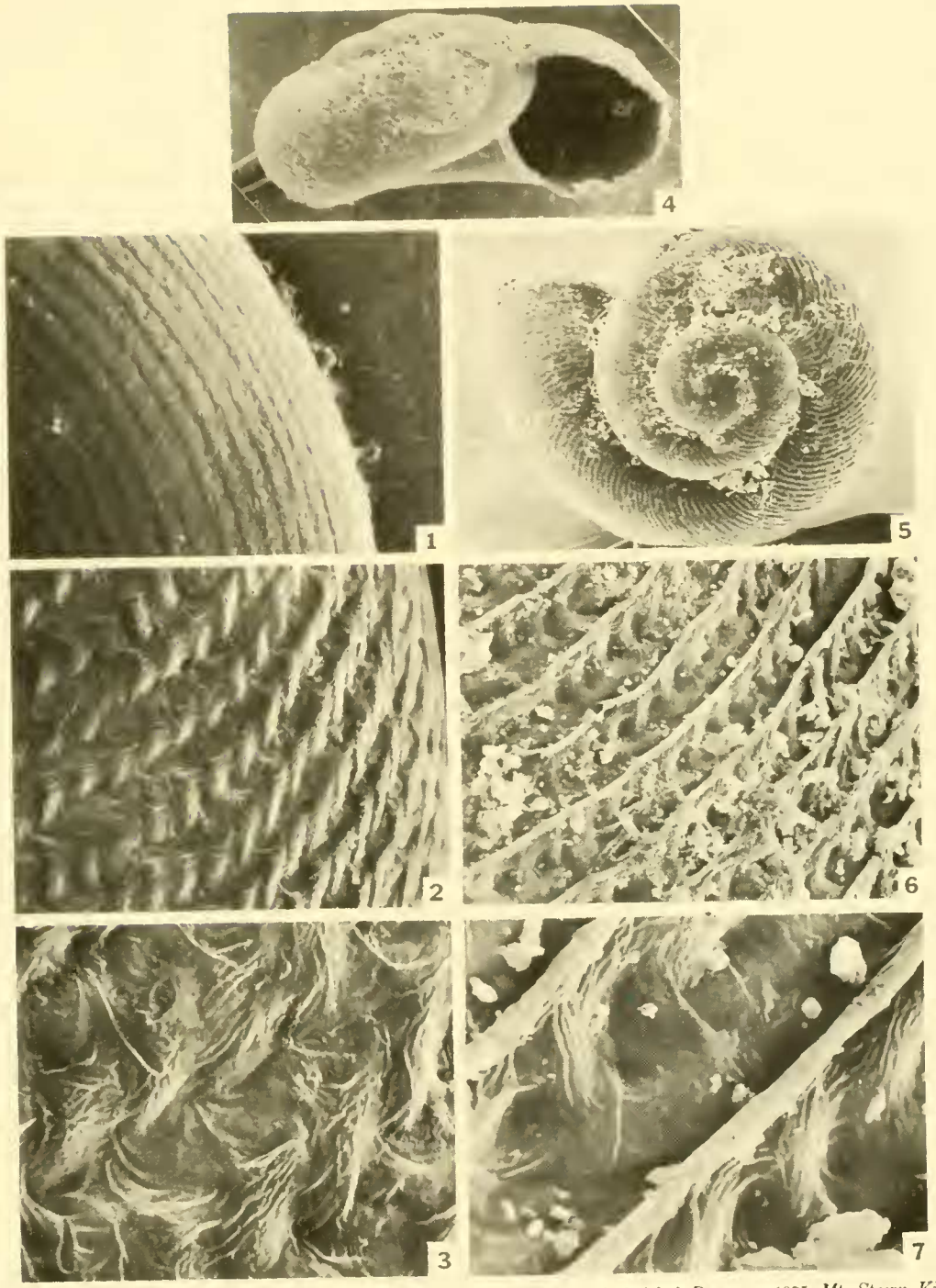
Although much of the surface in the paratype of *Radiodiscus hubrichti* (FMNH 175456) is coated with debris (figs. 4, 5), sufficient clean areas remain so that details of the microsculpture could be studied (figs. 6, 7). The apical sculpture for the first 1-3/8ths whorl consists of crowded spiral ridges (fig. 5). There is an intrusion of weak radials on the remaining slightly more than one-eight apical whorl. A constriction at the suture marks the end of this region. The post-nuclear sculpture consists of prominent radial ribs and weak spiral elements. This continues to the lip edge. Viewed at intermediate magnification (fig. 6), the radials are seen to be narrow thread-like elevations on top of weakly raised ridges. At high magnification (fig. 7), the inter-rib area shows "pits and swirls". There are distinctive mirco-folds on the pit edges as well as the surface of the radial ribs (upper left).

The apical sculpture of *Striatura milium* (fig. 1) is the same as that found in *S. pugetensis.* The post-nuclear sculpture (figs. 2, 3) of *S. milium* appears different at first glance, since the raised radial threads of *S. pugetensis* (fig. 6) are absent. When viewed at comparable high magnification (fig. 3), the "pits and swirls" found in inter-rib areas of *S. pugetensis* (fig. 7) are seen to be intensified in *S. milium* and represent the only post-nuclear sculptural element.

At the highest magnification (figs. 3, 7), both species show a very peculiar pattern of microfolding. This folding is very similar to stress marks seen in dried paint or plastic films. It is interpreted as the result of periostracal shrinkage drying. This "folding" also is characteristic of many zonitoid (Solem, unpublished) and pupillid taxa (see also Gittenberger, 1975, pl. I, fig. 4 and Solem, in this issue of *The Nautilus.*

SYNONYMY AND DISTRIBUTION

Striatura (S.) pugetensis (Dall, 1895) has a sporadic distribution from Vancouver Island south to Guadeloupe Island, Baja California, and the Palomar Mountains near San Diego (Pilsbry, 1946: 492). It is quite common near Seattle and



FIGS. 1-3. Striatura (S.) milium *(Morse, 1859). FMNH 90769. Near Minden, Halliburton Co., Ontario, Canada. P. M. Oughton!* FIG. 1. *Nuclear sculpture. 560X.* FIG. 2. *Sculpture on body whorl near aperture. 565X.* FIG. 3. *Detail of two "ribs" on body whorl. 1,670X.* FIGS. 4-7. Striatura (S.) pugetensis *(Dall, 1895). FMNH 175456. Paratype of* Radiodiscus hubrichti *Branson, 1975. Mt. Storm King, Olympic Peninsula, Washington.* FIG. 4. *Side view of shell. 36X.* FIG. 5. *Top view of shell. 36X.* FIG. 6. *Sculpture on body whorl showing the raised "ribs" on top of the same pattern seen in Fig. 2. 370X.* FIG. 7. *Detail of two radial ribs showing shrinkage pattern and inter-rib pits and swirls. 1,510X.*

on the Olympic Peninsula, from which *Radiodiscus hubrichti* was described. The dimensions cited by Branson (1975), his description, and his figures, all agree with the information concerning *S. pugetensis* given by Pilsbry (1946). Direct comparison of a paratype of *Radiodiscus hubrichti* (FMNH 175456) with the more than 25 sets of *S. pugetensis* in the collection of Field Museum of Natural History leaves no doubt that the two taxa are identical.

The following localities for *S. pugetensis* have not been published previously. They somewhat extend the distributional limits cited by Pilsbry (1946: 492), and are grouped by state for convenient reference.

Washington: Kittitas Co., 10 miles west of Easton (FMNH 63076, H. S. Dybas! June 20, 1957; Jefferson Co., Olympic Hot Springs (FMNH 63074, H. S. Dybas! June 19, 1957).

Idaho: Kootenai Co., Medimont (FMNH 63075, FMNH 63078, H. S. Dybas! June 23, 1957).

Montana: Flathead Co., T32N, R18W, S6 Glacier Park (FMNH 110716, Marie Mooar! July 7, 1960).

Oregon: Curry Co., ravine of Pistol River (FMNH 117741, H. S. Dybas! May 23, 1957); Hood River Co., Cascade Locks (FMNH 54322, H. W. Harry! November 1945).

California: San Francisco, Marina Hospital (FMNH 97655, W. H. Dall! ex Fred Button); Alameda Co., Hayward (FMNH 97708, ex Fred Button); Sacramento Co., northeast of Folsom (FMNH 97956, A. Solem & A. Smith! April 9, 1960); San Diego Co., San Diego (FMNH 63077, ex Walter F. Webb).

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